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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,792

02/17/2006

Esa Peltola

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EXAMINER

CERNOCH, STEVEN MICHAEL

ART UNIT

PAPER NUMBER

3752

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,792	<b>Applicant(s)</b> PELTOLA ET AL.	
	<b>Examiner</b> STEVEN CERNOCH	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-6, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Relyea et al. (US Pat NO 5,301,756) in view of Haruch et al. (US Pat No 5,921,472).

Re claim 1, Relyea et al. shows piercing a shell of a burning object by pushing at least one elongated piercing tool arranged in a rescue boom from the side of a first surface of the shell to the side of a second surface thereof (Fig. 13), feeding, along at least one longitudinal channel (Fig. 3, 49) in the piercing tool, a fire extinguishing medium (column 6, lines 21-31) to a nozzle (Fig. 15, 200) provided in the piercing tool, spraying the fire extinguishing medium to the side of the second surface of the shell through a plurality of orifices provided in the nozzle (column 10, line 42).

Relyea et al. does not teach directing a plurality of single jets expelled from the orifices so that they intersect one another to form a single uniform jet having a flat curtain-like shape.

However, Haruch et al. does teach directing a plurality of single jets expelled from the orifices so that they intersect one another (Fig. 1, 25) to form a single uniform jet having a flat curtain-like shape (col. 1, lines 22-23).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the orifices of Relyea et al. with the orifices of Haruch et al. to increase the efficiency of the apparatus (col. 3, lines 15-20).

Re claim 2, Relyea et al. shows using said jet in order to confine a seat of fire (column 9, lines 19-23 and 33-36).

Re claims 3 and 4, Relyea et al. shows turning the nozzle and the piercing tool around the longitudinal axis of the piercing tool in order to turn the curtain-like jet (column 1, lines 55-59).

Re claim 5, Relyea et al. shows a boom provided with at least one movable boom part connected to a base (Fig. 3), at least one piercing tool arranged at a free end of the boom (Fig. 15, 198), the piercing tool being an elongated piece comprising at least one longitudinal channel (194), at least one actuator for moving the piercing tool in the longitudinal direction of the piercing tool with respect to an outermost end of the boom (column 1, lines 55-59), at least one feed channel for feeding a fire extinguishing medium to the channel in the piercing tool (column 6, lines 21-31), at least one nozzle (Fig. 15, 200), which is an elongated piece and which is connected to the channel in the piercing tool (column 10, lines 40-44), the fire extinguishing medium being arranged to be fed through a plurality of orifices provided in the nozzle (column 10, line 42), and wherein in the longitudinal cross section of the nozzle, the orifices in the nozzle are arranged to pass via substantially the same imaginary plane so that the fire extinguishing medium fed through the orifices (column 9, lines 33-36).

Relyea et al. does not teach a plurality of single jets which intersect one another to form a single uniform jet having a flat curtain-like shape.

However, Haruch et al. does teach directing a plurality of single jets expelled from the orifices so that they intersect one another (Fig. 1, 25) to form a single uniform jet having a flat curtain-like shape (col. 1, lines 22-23).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have the motivation to modify the orifices of Relyea et al. with the orifices of Haruch et al. to increase the efficiency of the apparatus (col. 3, lines 15-20).

Re claim 6, Relyea et al. shows means are provided in connection with the piercing tool for turning the curtain-like jet expelled from the nozzle with respect to the longitudinal axis of the piercing tool (column 1, lines 55-59).

Re claim 14, Relyea et al. shows the step of extending a curtain-like flat jet to the front of the piercing tool (Fig. 15, 200 & 198).

Re claim 15, Relyea et al. shows wherein the orifices of the nozzle are directed obliquely forward (column 10, lines 36-37).

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Relyea et al. (US Pat No 5,301,756) in view of Tsuji et al. (US Pat No 3,913,845) further in view of Haruch et al. (US Pat No 5,921,472).

Re claim 7, Relyea et al. shows a nozzle of a piercing tool for spraying a fire extinguishing medium, the nozzle being an elongated piece having a front end and a rear end and the nozzle comprising: fastening means at the rear end of the nozzle for fastening the nozzle to the piercing tool (Fig. 15, 195, 196, 197, 198), at least one feed channel for feeding a fire extinguishing medium to the nozzle (194), a plurality of orifices extending from the feed channel to an outer surface of the nozzle (200), however

Relyea et al. does not teach the orifices being directed obliquely forwards such that the farther away from the front end of the nozzle a single orifice resides, the larger an acute angle between the middle axis of the orifice and the middle axis of the nozzle, and wherein in the longitudinal cross section of the nozzle, the orifices are arranged to pass via substantially the same imaginary plane so that the fire extinguishing medium fed through the orifices forms a plurality of single jets which intersect one another to form a single uniform jet having a flat curtain-like shape.

However, Tsuji et al. does teach the specific orifice pattern (Fig. 4, 6a, 6b, 6c, 6d).

While Haruch et al. teaches forms a plurality of single jets (Fig. 1, 25) which intersect one another to form a single uniform jet having a flat curtain-like shape (col. 1, lines 22-23).

It would have been obvious to one of ordinary skill in the art to have the motivation to combine the nozzle of Relyea et al. with the orifice pattern of Tsuji et al. to have the ability to shape the spray pattern as desired and the orifices of Haruch et al. to increase the efficiency of the apparatus (col. 3, lines 15-20).

Re claim 8, Tsuji et al. teaches the cross section of the single orifices in the nozzle is dimensioned to be the larger the smaller the angle between the middle axis of the orifice and the middle axis of the nozzle so that the curtain-like jet is arranged to extend to a larger distance at the front of the nozzle than on the sides of the nozzle (column 2, lines 5-14). It would have been obvious to one of ordinary skill in the art to have the motivation to combine the nozzle of Relyea et al. with the orifice pattern of Tsuji et al. to have the ability to shape the spray pattern as desired.

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Re claim 9, Relyea et al. shows the nozzle is a sleeve-like piece, and the front end of the nozzle is provided with connecting means for fastening a separate tip piece (Fig. 15, 196, 197, 198).

Re claim 10, Tsuji et al. teaches in the longitudinal cross section of the nozzle, the orifices are arranged successively in a first line of orifices and in a second line of orifices, and the first line of orifices resides on a first side of the middle axis of the nozzle while the second line of orifices resides on a second side of the middle axis thereof so that the nozzle is arranged to form a uniform, curtain-like jet extending to the sides and to the front of the nozzle (Fig. 4, 4', 6a-d). It would have been obvious to one of ordinary skill in the art to have the motivation to combine the nozzle of Relyea et al. with the orifice pattern of Tsuji et al. to have the ability to shape the spray pattern as desired.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Relyea et al. (US Pat No 5,301,756) in view of Tsuji et al. (US Pat No 3,913,845) further in view of Haruch et al. (US Pat No 5,921,472) as applied to claims 7-10 above, and further in view of Geddes et al. (US Pat No 2,246,797).

Re claim 11, Tsuji et al. teaches in the longitudinal cross section of the nozzle, the orifices are arranged successively in a first line of orifices and in a second line of orifices, and the first line of orifices resides on a first side of the middle axis of the nozzle while the second line of orifices resides on a second side of the middle axis thereof so that the nozzle is arranged to form a uniform, curtain-like jet extending to the sides and to the front of the nozzle (Fig. 4, 4', 6a-d), but does not teach that the outer surface of the nozzle is provided with at least one longitudinal groove at the first line of orifices and at least one longitudinal groove at the second line of orifices, however Geddes et al. does teach that the outer surface

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of the nozzle is provided with at least one longitudinal groove at the first line of orifices and at least one longitudinal groove at the second line of orifices (Figs 2&4, #42). It would have been obvious to one of ordinary skill in the art to have the motivation to combine the nozzle of Relyea et al. and the orifice pattern of Tsuji et al. with the grooves of Geddes et al. to further shape the spray pattern as desired.

Claims 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Relyea et al. (US Pat No 5,301,756) in view of Tsuji et al. (US Pat No 3,913,845) further in view of Haruch et al. (US Pat No 5,921,472) as applied to claims 7-10 above, and further in view of view of Geddes et al. (US Pat No 2,246,797) and Nicholson et al. (US Pat No 4,435,891).

Re claim 12, Tsuji et al. teaches in the longitudinal cross section of the nozzle, the orifices are arranged successively in a first line of orifices and in a second line of orifices, and the first line of orifices resides on a first side of the middle axis of the nozzle while the second line of orifices resides on a second side of the middle axis thereof so that the nozzle is arranged to form a uniform, curtain- like jet extending to the sides and to the front of the nozzle (Fig. 4, 4', 6a-d), while Geddes et al. teaches that the outer surface of the nozzle is provided with at least one longitudinal groove at the first line of orifices (Figs 2&4, #42), but neither teach the at least one longitudinal groove at the second line of orifices, however Nicholson et al. does teach the at least one longitudinal groove at the second line of orifices (Figs 1 & 2, 12 & 18). It would have been obvious to one of ordinary skill in the art to have the motivation to combine the nozzle of Relyea et al. and the orifice pattern of Tsuji et al. and the grooves of Geddes et al. with the 2nd line grooves of Nicholson et al. to ensure all of the outlets are properly seated.

Re claim 13, Tsuji et al. teaches in the longitudinal cross section of the nozzle, the orifices are arranged successively in a first line of orifices and in a second line of orifices, and the first line of orifices resides on a first side of the middle axis of the nozzle while the second line of orifices resides on a second side of the middle axis thereof so that the nozzle is arranged to form a uniform, curtain- like jet extending to the sides and to the front of the nozzle (Fig. 4, 4', 6a-d), while Geddes et al. teaches that the outer surface of the nozzle is provided with at least one longitudinal groove at the first line of orifices (Figs 2&4, #42) and Nicholson et al. teaches at least one longitudinal groove at the second line of orifices (Figs 1 & 2, 12 & 18), and the shape of the bottoms of the grooves in the outer surface of the nozzle is inwardly curved (Fig. 3, 18, 18' & 18"). It would have been obvious to one of ordinary skill in the art to have the motivation to combine the nozzle of Relyea et al. and the orifice pattern of Tsuji et al. and the grooves of Geddes et al. with the 2nd line grooves of Nicholson et al. to ensure a smooth transition with the nozzle walls.

### ***Response to Arguments***

Applicant's arguments filed 9/10/2009 have been fully considered but they are not persuasive. Regarding applicant's argument that Haruch does not disclose a flat spray except for the incorporation by reference of the Dou disclosure, the Examiner would like to point out that it is also disclosed in the abstract of Haruch on line 7. Applicant's argument that Haruch does not disclose discharge streams in the form of jets is erroneous as the definition of the word "jet" is simply a nozzle for emitting a liquid under pressure which is exactly what Haruch explicitly discloses. Regarding applicant's arguments against the motivation stated and that of non-analogous art, the efficiency increase takes place in the nozzle and its spray of which

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Haruch and Relyea both disclose making them analogous. The intended use of a nozzle holds no bearing on patentability.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN CERNOCH whose telephone number is (571)270-3540. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. C./

Examiner, Art Unit 3752

/Dinh Q Nguyen/

Primary Examiner, Art Unit 3752